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论著

α-粒子诱发人BEP2D 恶性转化细胞的亚克隆及DNA 链断裂修复研究

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摘要 目的:建立α2粒子诱发人支气管上皮细胞(BEP2D) 恶性转化细胞的克隆细胞系,研究其核型和DNA 链断裂修复能力。方法:1. 5 Gyα-粒子照射的BEP2D 细胞传35 代后接种裸鼠成瘤,取出瘤细胞进行亚克隆,挑出单个克隆扩大培养,G带显示分析细胞核型,脉冲电场凝胶电泳法检测DNA 双链断裂。结果:亚克隆了5 个恶性转化细胞系(RP35T21 ,22 ,24 ,25 ,26) ,核型基本与BEP2D 细胞相近,但有着不同的染色体缺失,其中2 株细胞(RP35T22 和RP35T24) 多倍体高达40 % ,明显高于BEP2D 细胞。恶性转化细胞RP35T21 和RP35T24 的DNA 双链断裂重接修复缺陷。结论:建立了α-粒子诱发人BEP2D 恶性转化细胞的克隆细胞系,DNA 链断裂修复缺陷可能是α-粒子致癌的一个重要特点。

关键词 人支气管上皮细胞 α-粒子 癌变 核型 DNA 修复

SUB-CLONINGOF MALIGNANT TRANSFORMANTS OF BEP2D INDUCED BY α-PARTICLES AND THEIR CAPACITY OF REJOINING DNA DOUBLE-STRAND BREAKS

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Abstract Purpose : To subclone the malignant transformants of human bronchial epithelial cell line (BEP2D) induced by α-particles and to analyse their karyotypes and capacity of rejoining DNA double-strand breaks (DSB) . Methods :Tumor cells were isolated from nude mice bearing malignant transformed cells(passage 35 cells of 1. 5 Gy of α-particles-irradiated BEP2D and were subcloned in vitro. Trypsin/ Giemsa banding of chromosomes and pulsed field gel electrophoresis were used to analyse karyotypes and DNA repair respectively. Results : Five individual malignant transformed cell lines (RP35T21 ,22 ,24 ,25 ,26) were subcloned. Multi-locus chromosome deletions were shown in these malignant transformed cell lines as well as the parental line BEP2D. The ratio of polyploids of RP35T22 and RP35T24 cells was about 40 % and was higher than that of PEB2D cells(5 %) , The other three lines showed the same polyploid levels as the parental cell line. The capacity of rejoining DSB in RP35T21 and RP35T24 cell lines was obviously deficient. Conclusion : Five malignant transformed cell lines were subcloned. The deficiency of DNA DSB repair could be an important characteristic of α-particle-induced carcinogenesis.

Keywords human bronchial epithelial cell α-particle carcinogenesis karyotype DNA repair

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